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ABSTRACT

In a unique class of combined elementary and secondary teacher education majors, this triangulated qualitative study investigated how cooperative structures affect student attitudes and motivation. In particular, the study examined students' preferences for instruction, students' attitudes and motivation related to their preference for cooperative structures, and students' perceptions of their own learning. Students were instructed in a lecture or lecture-discussion group using an incremental approach implementing the Jigsaw, Focused Discussion, Turn-to-Your-Partner, and TGT (Team, Games, Tournaments) cooperative structures. Five weeks of typical course content with cooperative groups was provided. Then students received an overview of cooperative learning history, theory, and characteristics of effective use. Providing experience with cooperative activities before introducing cooperative learning as a topic for study led to more positive attitudes. However, responses on attitude and motivation subscales of the "Learning Preference Scale: Students" (LPSS) and the "Learning and Study Strategies Inventory" (LASSI) indicated that students in the study had an above average attitude score and a below average motivation score. These findings were discussed with students in ethnographic interviews on student perceptions of college-level instruction and attitude and motivation toward learning. The study concluded that cooperative learning structures generally yielded positive outcomes for students. A final conclusion was that the students' interest in the material, use of language in learning the material, and active pursuit of learning was enhanced by structured cooperative groups. The appendix describes the cooperative structures used and how to implement them. (Contains 2 tables, 3 figures and 53 references.) (JB)

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IMPLEMENTING COOPERATIVE STRUCTURES TO INCREASE MOTIVATION AND LEARNING IN THE COLLEGE CLASSROOM

by

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Implementing Cooperative Structures to Increase Motivation and Learning in the College Classroom

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The assessment of college teaching and student learning continues to play an important role in improving instruction. Previously, Perry's (1970) research on developmental stages in college students' thinking showed that the students' process of cognition increases over the college years. More recently, McKeachie, Pintrich, Lin, and Smith (1986) suggested three aspects of instruction that will improve teaching: student discussion, emphasis on problem-solving, and verbalization of thinking strategies. In conjunction with other methodologies, these aspects can be provided effectively through cooperative learning groups in the college classrooms.

But although there has been substantial change in the awareness of instructional methods used at the postsecondary level, few studies have been undertaken that describe students' attitudes after using small group structures (Kulik et al., 1986). This study of instruction at the college level was intended to take advantage of a rare opportunity to gain an in-depth look at students engaged in small group learning and the effects language had on their motivation, attitudes and achievement.

Theoretical Framework

The theoretical foundation of cooperative learning stems from two broad perspectives (Slavin, 1987). The first holds the developmental perspective, derived in part from the theory of Vygotsky (1962), and the second holds the motivational perspective, related to the work of Lewin (1935) and Deutsch (1949).

Vygotsky, with his approaches to language acquisition and cognitive development, was a pivotal figure in the history of cooperative learning. He suggests, as a result of collaborative activities increasing information processing, that motivation to learn is enhanced with language as the key mode through which the students organize their thinking and regulate actions. When they engage in dialogue with others, they gradually internalize this dialogue so that it becomes inner speech which directs thinking and behavior.

The motivational perspectives of Lewin and Deutsch on cooperative learning proceed from a different starting point than Vygotsky's. Motivationalists are concerned with goal structures that create a situation in which the only way group members can attain their own personal goals is by group success (Slavin, 1987). Giving students a reasonable sense of control over their experiences increases their motivation to engage in learning tasks (DeCharms, 1976). Thus, either the developmental or motivational perspective of cooperative learning produces students making knowledge their own through intense interaction with others (Deci, 1975; Johnson & Johnson, 1989). The present study is consistent with these

positions regarding the superior motivating impact of cooperative learning compared to traditional college instruction.

Studies of the benefits of oral interaction found that elaboration strategies were used more frequently by individuals in groups than by those in individualistic situations (Webb, 1985). These strategies involve reorganizing and clarifying material that the student does or does not understand. As a result, elaboration influences the learning of both the student offering the help and the student receiving the help.

Research Aims

To explore how small-group instruction affects student attitudes, information processing, preferences for instruction, and motivation during assigned tasks was the purpose of the study. In particular, three questions guided this study. (1) How can the use of lecture with cooperative learning groups affect students' preferences for instruction? Does this preference relate to the student's major? (2) How does the student's attitude and motivation, as determined by the LASSI scores, relate with preference for cooperative structures? (3) How do different types of instruction affect college students' perceptions of their own learning? The focus of this presentation is on the implementation of the four structures used in this study to investigate those questions.

METHOD

The Setting

In a unique class of combined elementary and secondary teacher education majors, the triangulated qualitative study investigated how cooperative structures affect students' attitudes and motivation. On an average, students coming to this private liberal arts college score 15% higher on ACT/SAT tests than the national average for teacher education majors. Students were instructed in a lecture or lecture-discussion group format using an incremental approach implementing the Jigsaw, Focused Discussion, Turn-to-Your-Partner, and TGT cooperative structures. First, five weeks of typical course content while functioning as cooperative groups was provided. No explanation, justification, or background knowledge on cooperative learning or group dynamics was given. Then, during the fifth session, the researcher presented an overview of cooperative learning history, theory, and characteristics of effective use. Providing experience with cooperative activities before introducing cooperative learning as a topic for study led to more positive attitudes.

The Structures

The structures in this study included "Focused Discussion" or "Turn-to-Your-Partner" which enabled students to turn to the person next to them and informally process information regarding some aspect of the lecture. Additionally, this partner questioning time seemed to increase the number of students willing to take part in

larger discussion groups later as well as help with recall of lecture content for future tests. More formal groups such as Jigsaw and TGT (Slavin, 1987) increased achievement on quizzes and activity papers during lab sessions (Figure 1).

Procedure

Participants completed the Learning Preference Scale: Students (LPSS) (Owens & Barnes, 1982) and the Learning and Study Strategies Inventory (LASSI) (Weinstein, 1987). The LPSS measured preferences for individualistic, competitive, or cooperative structures. A 4-point Likert scale was used to calculate three subscores for each student, which indicated a strength of learning by cooperating with others, by competing with others, or by working alone (Owens & Straton, 1980). Although there are ten discrete components in the Learning and Study Strategies Inventory (LASSI), this study will focus on the subscales of attitude and motivation. Students' scores measure their general attitude and motivation for succeeding in school, performance of tasks related to school success and their use of learning and study strategies. Since overt and covert thoughts and behaviors contribute significantly to success in post-secondary educational settings, successful learning interventions can be provided as a result of the evaluation of learning strategies (Weinstein, 1978). Based on the student's scores in relationship to national norms or on a percentile cut-off score (75% being a common cut-off used on many campuses), prescriptions can then be made.

Both the LPSS and LASSI instruments were administered at the beginning of the semester before any experience with cooperative learning was provided. The LASSI and LPSS profile scores compared to the norms were used to identify the eight students which showed the greatest or least change on the LPSS or LASSI pretest and posttest and provided for the interviews a balanced selection based upon gender, grade point averages (GPAs), and majors.

Ethnographic interviews provided student perceptions of college-level instruction and their attitude and motivation toward learning. Each participant was interviewed using the same questions based on Spradley's (1980) descriptive, structural, and contrast questions. These interviews provided important information on student's perceptions of their attitudes, motivation, and preferences for instruction. All the interviews were audiotaped and the tapes were then typed into the IBM Ethnograph (Seidel, Kjolseth, & Clark, 1988) word for word to ensure accurate records of collected data. The Ethnograph read-out was then coded to discover any multiple categories. Domain analysis provided the recurring themes of college students' perceptions of learning, motivation, and those cooperative structures they perceived as having the greatest effect on their learning. In addition to the interviews, classroom artifacts or documents were analyzed for contributions to the research questions. Audiotapes of the group discussions were collected over a two month period to record group interactions during cooperative structures.

RESULTS

Theme 1: Preferences for Instruction

At the beginning of the semester, the class composite showed a pretest cooperative mean (41.69) for elementary majors as higher than the pretest cooperative mean (37.28) for the secondary majors. Students were placed in cooperative base groups according to major, gender, race, and GPA. Comparison of pre and posttest LPSS scores showed a significant increase in preferences for cooperative structures by secondary majors (Table 1). These results suggested the need for secondary education majors to experience additional courses in instructional methods as well as content courses in their major field. This shift toward more pro-cooperative and less individualized preferences for instruction resulted in part from the instructional treatment provided in this study, particularly with secondary education majors.

Providing first-hand experience in cooperative structures as well as teaching the use of small groups in the classroom seemed to have an effect on the secondary majors' preferences for the combined lecture and small group method of instruction. Perhaps the social needs of secondary education majors is underestimated when they leave the education department to pursue their various disciplines in other departments.

Table 1

Major/Cooperative Preference, Pre/Post

Group	N	Pre/Mean	Post/Mean
Elementary	13	41.69	40.84
Secondary	7	37.28	39.16

The instruction appeared to have enhanced the participants' ability to consider, feel comfortable with, and report a strong desire to use cooperative structures. One secondary student responded:

> It motivates you because everyone in your group expects you to know something. It makes you feel kind of bad when everyone adds something and you don't. It motivates you to do better. (ST. 18:48-53)

In this way, the knowledge and skills were first mastered in collaboration with others in a group structure. Once the knowledge and skills were presented in the group, students seemed to internalize the information as part of their own verbal thinking. One student described this belief by saying:

> Sometimes when I don't understand the material and I get in the group, it helps me to listen to what other people say; it may trigger something that will enable me to understand a little better (ST. 15:66-71).

When blended groups were structured to include a heterogeneous balance of major, gender, and ability, students cooperatively taught other students strategies. Much learning occurred through the guidance, direction, and support of others. Peers seemed to provide "other-regulation" and a purpose and reason for learning

certain concepts. In this way, the knowledge and skills were first mastered in collaboration with others in a group structure. The student's language in the group was internalized by the learner and used later for recall. This type of reciprocal "talking" was the interactive dialogue between students. As was evident by their responses, the way language was used in this course between students and their peers had an effect upon performance and classroom learning. "It helped me combine my ideas with my partner's ideas and come to a good answer after the material was presented. He helped me sort through my thinking." Thus, the study found communication mediates the effects of learning groups, since students needed to model their learning through language and thinking aloud.

A comparison of the pretest and posttests of the cooperative and competitive component scores data from the Learning Preference Scale: Students (Owens & Barnes, 1982) indicated no significant change. The LPSS showed a decrease in preference for the individualized instruction from a mean of 33.5 on the pretest to a mean of 31.16 on the posttest. This difference occurred after students experienced working in cooperative groups.

Theme 2: Attitude and Motivation

Responses on the LASSI attitude and motivation subscales indicated that: (a) compared to the norm, students in the study had an above average attitude score and a below average motivation score. A decrease in motivation occurred in both majors, but more of a decrease with the elementary majors than with the secondary

majors (Table 2). In addition to the slight decrease in the motivation subscale for secondary majors, there was a significant increase in the secondary majors' cooperative preference scores.

Table 2

Major to Motivation Pre/posttest

Group	Count	Pre/Mean	Post/Mean
Elementary	13	30.538	28.000
Secondary	7	32.571	31.333

Responses from students indicate a relationship between motivation and learning and the opportunity to discuss and verbalize course content with peers in their group. Specifically, students favored small groups that were structured with the components of individual accountability and group processing. Attitude LASSI scores indicated as being above the norm on the pre and posttest. These attitude behaviors include reading the textbook and class preparation. Motivation scores indicated as being above the norm on the pretest and decreasing on the posttest. These motivation behaviors include perseverance and willingness to work hard. During the interview, those with decreased motivation were asked what contributed to the decrease. The students' responses included statements such as,

> "My motivation has gone down. Just the weather and everything and I don't have the gumption to go and do it. Just getting down to the end of the year. I'm just slowing down." (ST. 10:75-80)

This response supported the changed scores from the motivation subscale to various motivation questions such as question 10: "I am up-to-date in my class assignments"; and question 33: "I talk myself into believing some excuse for not doing a study assignment."

Interviewed participants were asked to describe how cooperative structures affected their motivation. A student's response indicated, "When we got into small groups, I liked that, it's fun, and it gets my ideas going. It makes me more excited to be there because of the involvement in the class."

Motivation Toward Cooperative Learning
description of
-To learn it but it didn't seem like I was trying to learn it -It made the task easier -You got to work through a hard task with others -Someone else understood it and could explain it in their own words -There wasn't certain groups that were called on, we all had to be ready and had to be involved -It helped me combine my ideas to my partner's ideas -More active. I'm more interested in what's going on -You're interacting with everyone else -I can remember better what was said -It makes me feel bad when everyone adds something to the group and you don't. It motivates you to do better -You're not all alone and you have support

Figure 2: Domain of the description of cooperative learning.

Personal motivation. Each interviewee was asked the structural question, "What does motivation mean to you?" The domain of Figure 3 illustrated the student's view of taking responsibility for one's own motivation. No student suggested the professors they had were responsible for helping them become motivated. Students' responses such as "a desire to do something," "give it energy," and "I can motivate myself" illustrate this belief.

One student mentioned:

> If I'm motivated, then I have a desire to learn. It takes a lot for me to be motivated. If I get involved in the task, then I'm OK and I'll give it energy. (ST. 16: 181-187)

Personal Motivation
defined
-The will to do something -If I'm not motivated to learn something, I won't learn it -Ability to want to do something -To get inspired to do something -A desire to learn -Get involved in it; give it energy -I can motivate myself to do anything -To make you work at something -Something to get you to try harder -I'm more motivated in classes that use small groups -I can motivate myself -My ability to go out and do something -The second half of spring semester my motivation always drops

Figure 3: Domain of the definition of motivation.

Theme 3: Student Language

Only after they attempted to perform the task or skill, did some students seem to realize they did not understand what to do. Guided practice time within groups was critical for learners before they performed independently. This practice with others helped to insure that the learner understood the task accurately. These responses suggest that groups can provide an arena for elaborating and evaluating one's knowledge as well as practicing information. As indicated by student responses, the interaction and verbal rehearsal of key ideas increased recall.

The findings indicate students need to model their learning through language and thinking aloud. They felt teachers should arrange groups in which they could practice verbalizations and receive feedback of important course content.

> "It seems like in small groups you get a lot more feedback. You can discuss easier in a small group. You can get a lot more ideas from your peers." (ST. 10:53-56)

When implementing Focused Discussion, Turn-to-your-Partner, Jigsaw, and TGT Structures (Figure 1), students' verbal interactions were guided by questions that helped them question each other to clarify and summarize the material. These questions developed for use in the Focused Discussion structure also helped students verbalize knowledge between partners. The findings in the present study indicated that oral repetition played an important role in guiding students' learning. They believed these verbal interactions of questioning each other and summarizing the material helped them remember the material for later use,

particularly for their test.

Implications for College Teaching

The present study described the effective implementation of philosophical, developmental, and psychological principles to provide a major change in the nature of the college students' educational experience. This change led to more positive views of learning. The components of this higher-level learning were reported by the interviewed students as they viewed cooperative structures providing knowledge, ideas, cognitive processes, opinions, and disagreements with their groupmates. Students were able to rethink and rephrase their thoughts and statements until the group task was concluded. When college instructors understand how students can learn by using strategies such as repetition or elaboration strategies within cooperative structures, they may provide more ways to foster cognitive strategies through their course activities and methods of teaching.

There was clear confirmation regarding the value of cooperative learning for developing group participation. Students also reported greater opportunities to review information and get help, less confusion and frustration, and perceptions of being more intellectually challenged in cooperative than in lecture-discussion activities.

As indicated previously, the improvement of methods of instruction to promote higher levels of achievement is one of the goals of many college level teachers. From the research findings, cooperative structures seem to enable

students to feel that they had a chance to succeed, that their efforts led to success, and that success was a valued goal. As indicated by the interview responses, expectations of peers expressed during the performance of the group's task influenced the other group members' behavior and motivation. These feelings were essential predictors of motivation and perceptions of success. As evident by student comments, college students who discussed course content under structured cooperative conditions felt more pressure to achieve from their peers, felt an obligation to their groupmates, and had a strong desire to win their groupmates' response. Thus, the learning environment of college students included the social, affective, and learning components of the classroom and had a reciprocal impact on achievement, motivation, and the student's attitude toward learning, the content, and the course. These findings supported the studies from the literature where due to positive attitudes toward the learning process, students perceived their classroom climate as positive and were more motivated to participate in reaching group goals.

Although student motivation scores moderately decreased at the end of the semester, the interview data attributed this to the time element of being at the end of the year, the amount of work due, and the obligations of spring sports. It appeared reasonable to attribute a portion of favorable student responses to being a part of a base group using cooperative structures and the understanding of specific cooperative learning guidelines and research. All students displayed the capacity for behaving cooperatively with one another, specifically after the fifth instructional

intervention.

Students who scored low on "The Attitude Scale" need to work on higher level goal setting and reassess how school fits into their future. If school is not seen as relevant to the student's life goals and attitudes, then it will be difficult, if not impossible, to generate the level of motivation needed to help take responsibility for one's own learning and managing one's own study activities.

Students who scored low on the motivation subscale need to work on accepting more responsibility for studying and achievement outcomes and learn to attribute much of what happens to them in school to their own efforts rather than to outside forces such as luck, or poor teachers. Accepting more responsibility and attributing success to one's efforts result in more effective studying and school performance.

This study did not begin to question the use of language in cooperative structure at the college level. The importance of language and verbal strategies in groups was indicated by the data and the interview responses. As the students pursued their group tasks, their perceptions of language and learning in cooperative structures unfolded into two themes. First, students need to give attention to how they talk among themselves to verbally rehearse and understand course content. A second theme is that cooperation should be modeled and experienced by students. The students needed to be a part of and experience the processes of being in a group, as well as to learn by direct instruction. As a result of this experience,

groups worked through problems and functioned better to meet goals and tasks.

The study concluded that cooperative learning at the college level more often than not yielded positive outcomes for students. A final conclusion was that the students' interest in the material, use of language in learning the material, and their active pursuit of learning was enhanced by structured cooperative groups. In light of the above considerations, the study suggested that cooperative learning at the college level will have a direct positive effect on students' perceptions of their learning and achievement and an indirect effect on achievement and motivation by student's using oral language.

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Figure 1: Selected Structures

Cooperative Stucture	Brief Description	Academic & Social Function
Turn-to-Your-Partner	The teacher asks a question, students consult their partner to make sure they know the answer.	Review, checking for knowledge, comprehension; breaks up lecture.
Focused Discussion	Before lecturing, the instructor places 3 key questions on the overhead; every 15 minutes or so, the instructor asks 1 of the key questions and the students discuss their understanding with another student; summarize key questions during the last 5 minutes of class.	Review, checking for knowledge, breaks up lecture; gives students "focus pegs" prior to the lecture.
Jigsaw	Each student on a team of four becomes an "expert" on one section by working with members from other teams assigned the same corresponding section. Upon returning to their base team, each one in turn teaches the group; each person is 1 piece of the jigsaw puzzle. Jigsaw II evaluates individuals understanding of the 4 parts of the script with a quiz.	Acquisition of script material, "teaching others" review, informed debate.
TGT: Team, Games, Tournment	Students study in heterogeneous teams (base groups) and complete in homogeneous groups. Tournament tables change periodically when students are bumped to new tables after each tournament based on top, middle, or low scorer points.	Uses academic game tournaments, students compete as representatives of their teams; review of course content.

Appendix:

Jigsaw

Step 1: Students were assigned to four member base teams

Step 2: Academic material broken down into four pieces
(I use colored cards or numbers 1-4)

Step 3: Each team member studies, completes, or masters own section. (10 min.)
"Study your own section so you can":
-synthesize and summarize the information
-list specific strategies or examples
-relate to a new situation

Step 4: Members of different teams who have studied the same sections meet in "expert" groups to discuss their sections (15 min.)
Reach consensus on the most important concepts

"Prepare to share the material with your base group by":
-outlining exactly what you want to share
-prepare something visual to illustrate your point (diagram, metaphor, chart, etc.)
-prepare a way to check to see if they understand

Step 5: Then, students return to their teams and take turns teaching their teammates about their sections (20 min.)

Since the only way students can learn about sections other than their own is to listen carefully to teammates, they are motivated to support and show interest in each other's work.

TGT - Teams-Games-Tournaments

Step 1: Student review and study in heterogenous teams (base groups) a list of 30 key questions on a specific topic for 1 classtime.

Step 2: -During the tournament, homogeneous groups of 3-4 compete.
-Each table should have 1 Game Question Sheet and 1 Game Answer Sheet, and a set of cards with numbers 1-30

Step 3: -To play, shuffle the cards. Each person pick a card to see who will be first.
-The starting player takes a card from the top of the deck and answers the question on the game sheet that corresponds to that number. When the starting player has answered, the player to his/her immediate left may challenge and give another answer or pass. The next person to the left has a chance to challenge or pass. When all 3 players have challenged or passed, the last in line checks the answer sheet to see who was right. Whoever was right keeps the number card. If the challenger was wrong, he/she must place a previously won card back in the deck as a penalty.

Step 4: Record your scores (the number of cards won). Top scorer wins 60 points, middle scores win 40 points, and low scorer wins 20 points.

Step 5: Team recognition.

TABLE #_____ **ROUND#_____**

Player	Team	Game 1	Game 2	Game 3	Day's Total	Tournament Points

For A Four-Player Game

Player	No Ties	Tie for Top	Tie for Middle	Tie for Low	3-Way Tie for Top	3-Way Tie for Low	4-Way Tie	Tie for Low and High
Top Scorer	60 points	50	60	60	50	60	40	50
High Middle Scorer	40 points	50	40	40	50	30	40	50
Low Middle Scorer	30 points	30	40	30	50	30	40	30
Low Scorer	20 points	20	20	30	20	30	40	30

Questions on TGT

1. What do the letters TGT stand for?
2. How is TGT different from STAD?
3. How are student grouped for TGT?
4. How many students are in one group?
5. What do you do if the number of students in class doesn't divide evenly by 3?
6. What are the 5 components of TGT?
7. What are the games composed of?
8. What materials does each team need?
9. What step comes between class presentation and the games?
10. How does the game start?
11. How do you decide who takes the first turn?
12. Can members of the same team be in the same group?
13. In what direction does play proceed?
14. How many class periods are used for class presentation?
15. How many class periods are used for team study?
16. How many class periods are used for tournaments?
17. Who are the challengers?
18. What happens if you challenge the reader's answer and you are right?
19. What happens if you challenge the reader's answer and you are wrong?
20. What happens if the reader is wrong?
21. Who checks the answer?
22. What are the 3 options each group member has on each question?
23. When does play end?
24. How is the tournament scored?
25. Who keeps score?
26. Certificates are an example of what?
27. What is bumping?
28. Who moves up to the next higher ability table?
29. Who moves down to the next lower ability table?
30. What is the exception to the bumping rule for the high scorer at the high table and the low scorer at the low table?

Answers for TGT

1. Teams, Games, Tournament
2. Uses tournaments instead of quizzes
3. By past academic performance
4. 3
5. One or two teams will have 4 members
6. Class presentation, teams, games, tournaments, and team recognition
7. Content-relevant questions designed to test the knowledge students gain from class presentations and team practice.
8. A deck of cards number 1 through 30, a question sheet, and an answer sheet
9. Team practice
10. The student picks a number and attempts to answer that question
11. By drawing cards before play begins.
12. No
13. To the left (or clockwise)
14. 1 to 2
15. 1 to 2
16. 1
17. All members of the group other than the reader
18. You keep the card
19. You have to put one of the cards you have won back in the deck.
20. There is no penalty.
21. The person to the right of the reader.
22. Answer, challenge, pass
23. When the deck is exhausted or the period ends, which ever comes first.
24. Top scorer - 60 pts, second scorer - 40 pts, and third scorer - 20 pts.
25. The group members enter their own.
26. Team recognition
27. Reassigning students to new tournament tables
28. The highest scorer at the table
29. The lowest scorer at the table
30. They stay at the same table.

Turn-to-Your-Partner

Step 1: Students sit beside one other person during the lecture.
Step 2: Lecture
Step 3: The instructor asks intermittent questions within the lecture.
Step 4: They consult their partner and share understandings
Step 5: Instructor calls on one or more partnerships for an answer.

Focused Discussion

Step 1: Students sit beside one other person during the lecture
Step 2: Before lecturing, the instructor places 3 key questions on the overhead projector
Step 3: Every 15 minutes or so, the instructor asks 1 of the key questions and the students discuss their understandings with another student
Step 4: Continue to lecture
Step 5: Take 5 minutes at the end of class to share key question responses

Sample Key Questions

1. Name and define the five basic elements of cooperative learning.

2. Name and describe four ways of structuring positive interdependence and individual accountability within cooperative structures.

3. Define the role of the teacher in monitoring cooperative groups.